



ENERGY POLICY UPDATE

June 9, 2014

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UPCOMING WEBINARS

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The Arizona Republic now has limited access. As such, links may or may not work.

ARIZONA-RELATED

[Carbon Standards for Reservation Power Plants Delayed](#)

[Associated Press, June 5] Flagstaff – Two of the Southwest's largest coal-fired power plants straddle the San Juan River in northwestern New Mexico, one within clear view of the other. But one of them didn't factor into the Obama administration's plans to reduce carbon dioxide emissions across the nation because it is on an American Indian reservation. The U.S. Environmental Protection Agency said it will hold off on emissions standards for four power plants on reservations to talk further with tribes and give them an opportunity to create cleanup plans of their own. If the tribes decline, the federal government will craft plans for them. "There's a different federal-tribal relationship than there are with states, so we wanted to take that into account," EPA spokeswoman Liz Purchia said. Two of the power plants on the Navajo Nation — the Navajo Generating Station in Page and the Four Corners Power Plant near Farmington, New Mexico — are among the country's top emitters of carbon dioxide, releasing 17.8 million short tons and 12.9 million short tons in 2013, respectively. Both have plans to shutter some of the generating units, which will cut down on carbon dioxide emissions that are blamed for heating the planet. The other two are the natural gas-powered South Point Energy Center on the Fort Mohave Indian Reservation in western Arizona and the coal-fired Bonanza Power Plant on Ute lands in northeastern Utah.

[Green Chandler Company Looks to Bask in Solar Savings](#)

[Arizona Republic, May 27] It is only logical that a company that helps others save money through the use of energy-efficient products would take a hard look at its own energy consumption. That is how Bonded Logic, a company that turns old blue jeans into energy-efficient insulation, decided to make a big commitment to solar energy. The company is turning an empty parcel of land at its south Chandler manufacturing plant into a 1,300-panel, 65,000-square-foot solar array that is expected to generate as much as 25 percent of the plant's electricity. Bonded Logic is part of a growing number of Southeast Valley companies or public facilities investing in solar energy. "We're kind of approaching it at both ends," Bonded Logic co-founder Tod Kean said. "We're making a product that's good for energy efficiency, and we want to pump in that green power, too. We don't just try to be cool by being green, we really are green." Max Burger, manager of Salt River Project's Commercial Solar Incentive Program, said more companies are exploring the benefits of solar power. As a result, the power company is ahead of its projected goals for renewable energy.

[National Geothermal Data System – Free Online Access to America's Digital Geothermal Resources](#)

[Arizona Geological Survey, May 29] Tucson, AZ - The US Department of Energy (DOE) formally

launched the [National Geothermal Data System](#) (NGDS) on April 30, 2014. Populated with geothermal-relevant data from all 50 states, the NGDS has the potential to fundamentally change America's energy portfolio by driving efficient exploration for clean, renewable energy from Earth's interior. State Geological Surveys across the country significantly contributed to this effort by digitizing and making available online more than 30 major types of data resulting in the availability of more than 7 million interoperable data points including 650,000 well logs, 530,000 borehole temperatures, and 1.7 million oil and gas, water, and geothermal well headers. The State Geological Surveys contributions to the NGDS project was funded by a \$21.9 million agreement from the DOE's Geothermal Technologies Office and led by the Arizona Geological Survey on behalf of the Association of American State Geologists (AASG). *Scientific American* touted the beta form of NGDS in "[Heated to the Core](#)" while Sara Pratt, associate editor of *EARTH* magazine, described NGDS as, "one of the most successful programs to date," for data sharing and Big Data in the geosciences ("[Digitizing Earth: Developing a cyberinfrastructure for the geosciences](#)"). The Arizona Geological Survey collected and digitized data from several states, including Colorado and New Mexico, and helped the California Division of Oil, Gas & Geothermal Resources digitize a large volume of "at risk" hard copy data. This work added over 50,000 data records to the project. To increase widespread usability of this data, AZGS built and launched the [Arizona Oil and Gas Viewer](#). The data from this service is also available at NGDS.

[Obama's Push to Cut Power Plant Pollution Will Have Big Arizona Impact](#)

[Phoenix Business Journal, June 2] President [Barack Obama](#)'s push for power plants to cut carbon emissions 30 percent by 2030 could have a big impact on Arizona utilities and electricity consumers. It also comes after a federal fight to curtail emissions at the coal-fired Navajo Generating Station in far Northern Arizona. The White House contends the push will improve air quality, reduce asthma attacks and create other health benefits. The move is also meant to encourage more renewable energy production. An administration brief on the rule says Arizona power plants produced 53 million metric tons of carbon pollution in 2012 — the equivalent of 11 million cars. The same brief contends cutting power plant pollution will decrease heart attacks by 2,100 and asthma attacks by 100,000 nationally. The pollution proposals could force the closure or modernization of older and coal-fired plants. That could cost utilities and their customers.

[Solar Advocates Rally Against Property Tax on Leased Panels](#)

[Arizona Republic, June 5] More than 200 solar-energy advocates and workers protested at the Arizona Capitol on Wednesday as the state prepares to collect property taxes on leased solar panels. The event featured free T-shirts reading "Don't Tax the Sun," a performance by a group of senior-citizen cheerleaders, and solar- and tax-themed music played by a DJ, including the Beatles' "Taxman." The protest targeted the state Department of Revenue's decision to assess property taxes on leased solar panels, which will be due next year. "Today we stand here to ask Gov. Jan Brewer to do the right thing and have the bureaucrats that work for her eliminate this tax," said Barry Goldwater Jr., chairman of a group called TUSK, or Tell Utilities Solar Won't Be Killed. The Department of Revenue has said that the policy decision was reached after lengthy analysis, and that any reversal of policy would have to come from the state Legislature. A bill was introduced on the matter in the most recent session, but it was not passed. TUSK is supported by companies that offer solar leases, such as SolarCity Corp. and Sunrun Inc., and many solar-industry workers attended the event. But other groups were present Wednesday supporting the rally, including a large contingent of attendees from Sun City and Sun City West, both large retirement communities where high concentrations of residents use solar power. Goldwater played to the older crowd by paraphrasing Ronald Reagan.

[Tesla: Arizona "Very Much" in Running for Battery Factory](#)

[Arizona Republic, June 4] The decision regarding which state will house a battery factory for Palo Alto, Calif.-based Tesla Motors Inc. won't be made this month as planned, but is expected this year, the company CEO said Tuesday. During a shareholder conference broadcast online, CEO Elon Musk said the electric car company likely will also select two backup sites to ensure the massive project is not delayed. Tesla makes 25,000 or so cars a year now, and is constrained by battery production. Musk said in February the company was planning a gargantuan factory and shopping for 500 to 1,000 acres in Arizona, Nevada, New Mexico and Texas for the plant and its 6,500 workers. Since then the company said it also is having talks with California about the factory, but that the planning in that state would probably take too long. In May, Musk said the company likely would be making its first choice and breaking ground in June, with a backup site selected soon afterwards.

[US Navy Supports ASU's Development of Algae-Based Biofuels](#)

[ASU News, May 27] The similarities between the U.S. Navy and civilian cities and industry may

not be readily apparent, said Dennis McGinn, U.S. Navy Assistant Secretary for Energy, Installations and Environment, but in the realm of energy use and reliability, there are often parallel problems to be solved. Where there are overlapping issues, such as cost, sustainability, efficiency and energy security, McGinn said the Navy is interested in working with research institutions and industry to improve the energy outlook for all. "We are thinking about energy in three different ways: first in technology terms; biofuels, wind and solar energy storage, power grid systems and more," McGinn said during a visit to Arizona State University. "But it takes two other critical elements to achieve our energy goals: partnerships and culture. This is why we're interested in forging and strengthening relationships with outstanding organizations like ASU." While the Department of the Navy broadly funds energy research, another key aspect is its considerable influence in setting purchasing standards for their operations. The Navy is using its authority under the Defense Production Act, which allows the Navy, in partnership with the U.S. Department of Energy (DOE) and the U.S. Department of Agriculture (USDA) to invest in industries that are determined critical to national security; in this case, biofuels. McGinn said that the Navy has already invested millions in projects with the DOE and USDA in order to bring down the cost of producing biofuel. "The Navy wants to buy anywhere between 10 and 50 percent biofuel blends for our ships," he said. "We want it to be a cost-competitive program. We are working specifically with the USDA to bring down biofuel costs to \$3.50 a gallon or less at the commercial scale of 170 million gallons a year by 2016." As part of his visit to ASU, McGinn toured the Arizona Center for Algae Technology and Innovation (AzCATI) at the Polytechnic campus in Mesa. As the largest university-based algae facility on the globe, AzCATI leads the DOE-funded national algae testbed, the Algae Testbed Public-Private Partnership (ATP3). The Navy has interest in the work done by AzCATI and ATP3, especially if the cost of creating algae biofuels can shrink to compete with traditional fuel markets, McGinn said.

[Vivint Solar Expands into Arizona Market](#)

The company employs roughly 130 people from two offices in Arizona

[Arizona Republic, June 5] Utah-based Vivint Solar, which installs residential solar panels and specializes in leases, has moved into the Arizona market and employs about 130 people from two offices. The company has an office on West Roosevelt in Phoenix serving the West Valley, and one in Mesa serving the East Valley. Vivint had been considering moving into the market, but put off the expansion until the net-metering debate with Arizona Public Service Co. was settled last year, said Chance Allred, vice president of sales. APS had asked regulators to charge solar customers an additional \$50 to \$100 a month, but the Arizona Corporation Commission settled on a fee that averages about \$5 a month for the average residential customer. That new fee applies to customers who install solar after January 1 of this year. Allred said sales have been good since the company began operating in Arizona in May, despite that fee.

ALTERNATIVE ENERGY & EFFICIENCY

[Eight States Commit to Zero Emission Vehicles](#)

[Fierce Energy, June 2] Eight states have released an action plan to reach their collective goal of 3.3 million zero emission vehicles (ZEV), including electric vehicles (EV) and fuel cell vehicles, by 2025. The plan lays out 11 areas for individual and collective action by states like Massachusetts, Connecticut, Rhode Island, and Vermont -- including consumer incentives, state fleet purchases, and elimination of barriers to EV charging stations. Transportation and energy are inextricably linked, yet policies surrounding each are often created in a vacuum. Policymakers must pursue an integrated approach that appropriately values long-term benefits and offers the right mix of incentives to consumers, utilities, investors, and market participants to ensure clean, flexible and affordable vehicle charging and a range of attractive vehicle choice. Each of the eight states has already adopted clean air regulations that require car manufacturers to sell these vehicles. In New England, using electricity as fuel costs drivers one-third as much as regular gasoline, in addition to cutting greenhouse gas emissions by more than 60 percent -- so adoption of electric vehicles is an attractive consumer option, according to nonprofit research and advocacy organization ENE.

[Groupon, Musk Offer Solar Deal to Incentivize PV Sales](#)

[Fox Business, May 28] Why aren't solar panels on every sun-facing home? Most will say the exorbitant installation costs. While residential solar has made strides, Groupon ([GRPN](#)) and Elon Musk's SolarCity ([SCTY](#)) are hoping to give it an extra jolt. The two announced a partnership on Wednesday to offer a "daily deal" -- paying a dollar for \$400 off of home solar power. This is SolarCity's first national deal and comes amid rising competition to dominate residential solar power. With the purchase, buyers will get a free consultation from SolarCity, and the \$400 discount will be applied to the site survey and installation. This really only appeals to people willing to chalk up the remaining tens of thousands of dollars to install a three- or four-kilowatt PV system.

The cost of a PV system varies drastically depending on the system size, shape of house, access to sun and location. According to Go Solar California, the total average cost of an installed residential PV system under the California Solar Initiative was \$8.70 per Watt including installation as of January 2011. That translates to about \$34,800 for a four-kilowatt system, the average size of a residential installation. However, proponents of solar say it will save money over the long term by essentially taking the home off the energy-devouring power grid.

Hydrogen Fuel Finally Graduating from Lab to City Streets

[Bloomberg, June 5] Once relegated to the realm of science projects, hydrogen fuel cells are starting to displace fossil fuels as a means of powering cars, homes and businesses. On June 10, in the latest addition to mainstream fuel-cell use, Hyundai Motor Co. will begin deliveries of a consumer SUV in Southern California. The technology is already producing electricity for the grid in Connecticut. AT&T Inc. is using fuel cells to power server farms, and Wal-Mart Stores Inc. uses hydrogen-powered fork lifts. Later this summer, FedEx Corp. will begin using hydrogen cargo tractors at its Memphis air hub. "This is the most exciting time for fuel cells in my career," said Daniel Dedrick, head of hydrogen and combustion technologies at Sandia National Laboratories in Livermore, California. The hydrogen market "is starting to accelerate." Fuel cells produce electricity from hydrogen in a process that dates back to the 1830s, yet high costs have historically made the technology better suited for Apollo space missions and Soviet submarines. In recent years, the technology has made big strides, and prices are falling. And because the process produces little or no greenhouse gases, hydrogen power stands to get a boost in the wake of President Barack Obama's recent call for tighter controls on carbon emissions.

Nation's Largest Geothermal Heating, Cooling System Installed

[Power Engineering, June 3] Rockline Industries has completed the installation of the nation's largest single geothermal heating and cooling system at a production facility. The 1.2 million square foot facility, located in Booneville, Arkansas, is the only production plant to utilize geothermal technology. The installation is expected to reduce the city's reliance on natural gas by 65 percent and reduce the company's greenhouse gas emissions by 25 percent. The company has set a goal to reduce greenhouse gas emissions by 15 percent by the end of 2015.

Payback Time for Solar-Power Energy Systems

[Wall Street Journal, May 22] Homes with solar-power system using photovoltaic (PV) panels sell for an average \$24,705 more than homes without PV systems, research finds. [Wall Street Journal, May 22] Etta Kantor's four-bedroom, Adirondack-style home in New Canaan, Conn., was recently listed for \$4.5 million. It comes with a trove of luxury features—gourmet kitchen, gazebo, pool and spa. Another top selling point: 48 silicon solar panels mounted on the ground. The 10.8-kilowatt photovoltaic panels nearly offset Ms. Kantor's entire electric bill, covering her house, pool and electric car, leaving her with a bill of less than \$100, on average, a month. But the bigger premium may come at sale time: New research finds that homes with photovoltaic (PV) systems sell for an average \$24,705 more for a typical 3.1-kilowatt system than homes without PV systems, says lead author Ben Hoen, a researcher at Berkeley Lab in California.

Solar Market to Nearly Triple by 2018 as Asia Leads Europe-EPIA

* 38.4 GW of solar capacity installed in 2013, up 28 pct

* Asia beats Europe as world's largest solar market

* Total global installations stand at 139 GW as per end-2013

[Reuters, June 2] FRANKFURT – Globally installed solar capacity will nearly triple over the next four years, boosted by strong growth in Asia, which dethroned Europe as the world's biggest solar market last year, according to a major industry association. Cumulative photovoltaic installations are seen rising to about 374 gigawatt (GW) in 2018, compared with 139 GW last year, the European Photovoltaic Industry Association (EPIA) said on Monday in its annual market report. The figures are based on EPIA's "medium scenario", which it says depicts the most probable market development until 2018. Asia is expected to account for more than 40 percent of the global total in 2018, up from about 29 percent in 2013, while Europe's share will diminish to about 35 percent, down from last year's 59 percent. "Europe's role as the unquestioned leader in the PV market has come to an end," EPIA said. "For the first time in more than a decade, the European PV market was no longer the top regional PV market in the world." The global shift in demand reflects plunging solar subsidies in Europe, where years of government support helped the sector to blossom, while Asian economies, most notably China, increasingly bank on photovoltaics as an energy source. In many markets, solar power still needs subsidies to compete with conventional energy sources, such as coal, gas and nuclear. The Brussels-based EPIA groups more than 100 member companies and institutions, including German players SMA Solar and SolarWorld as well as U.S.-based First Solar and Italy's Enel Green Power.

[U.S. Solar Power Rises 79% as Home Panels Beat Warehouses](#)

[Bloomberg, May 28] Homeowners and developers installed 1.33 gigawatts of solar panels in the first quarter, the second-largest total on record, according to the [Solar Energy Industries Association](#). Installation increased 79 percent from the same quarter a year earlier with utility-scale projects making up almost two-thirds of the total and homeowner demand surging, the Washington-based trade group said today in a statement. Total installations may reach 6.6 gigawatts this year, driven by residential rooftop systems and more than 12 gigawatts of utility projects under development, said Shayle Kann, vice president of research at Boston-based GTM Research, which publishes the quarterly market reports with SEIA. This was the first quarter when residential systems exceeded commercial and government solar.

ENERGY/GENERAL

[China Follows USA with Emissions Pledge](#)

[USA Today, June 3] One day after the United States said it would slash carbon emissions from existing power plants by 30% below 2005 levels, China, the world's largest emitter of greenhouse gases, said it would set an absolute cap on its emissions by 2016. The announcement comes ahead of the start of U.N.-sponsored climate talks in Bonn, Germany, on Wednesday. The steps being taken by the world's top two polluters are important announcements that signal positive steps in addressing the planet's changing climate, Christiana Figueres, the U.N.'s top climate official, told USA TODAY on Tuesday. However, she cautioned, "We need ever higher ambition by all nations in the run-up to the U.N. climate convention meeting in Paris in 2015 — ambition that can match emission reductions and support for adaptation in vulnerable countries and communities with the sobering scientific reality." In Paris, the U.N. is seeking to adopt a legally binding agreement on emissions that will cover all nations.

[Domestic Production Satisfies 84% of Total U.S. Energy Demand in 2013](#)

[U.S. Energy Information Administration, June 2] Total U.S. energy production reached 81.7 quadrillion British thermal units (quads) in 2013, enough to satisfy 84% of total U.S. energy demand, which totaled 97.5 quads. Natural gas was the largest domestically produced energy resource for the third year in a row and, together with the other fossil fuels (coal, crude oil, and hydrocarbon gas liquids), accounted for more than three quarters of U.S. energy production. In total, the United States consumed 97.5 quads of energy, 82% of which was fossil fuels. Renewable and nuclear energy made up 10% and 8%, respectively, of U.S. energy consumption. The portion of U.S. energy consumption supplied by domestic production has been increasing since 2005, when it was at its historical low point (69%). Since 2005, production of domestic resources, particularly natural gas and crude oil, has been increasing as a result of the application of technologies that can develop harder-to-produce resources. At the same time, reduced road travel, improved vehicle efficiency, and competition among fuels for electric power generation have limited consumption of petroleum and coal.

[Mexico Now Permits Distributed Energy Generation](#)

[Energy Manager Today, June 2] In Mexico, most of the electric capacity is owned and operated by the government's Comisión Federal de Electricidad (CFE). [Two decades ago, that percentage was close to 100 percent, but a set of constitutional amendments in 1992 worked to liberalize the Mexican electricity market over time.](#) This legislation opened the operation of electric capacity to the private sector and led to the growth of privately owned capacity additions from independent power producers and industrial facilities. Private participation in electricity generation is now open through a permitting process for independent power producers and self-supplied and cogeneration facilities (which produce both electricity and steam for industrial processes) that are often located at industrial plants, [according to the US Energy Information Administration](#). Capacity is also privately held for imports or exports across Mexican borders as well as for small producers under 30 MW.

[New Interest in Natural Gas as a Transportation Fuel](#)

[Fierce Energy, June 3] In recent years, in many parts of the world, natural gas supplies have increased due to new pipelines and hydraulic fracturing, leading to reduced prices for natural gas and wider geographic availability of vehicle refueling. As a result, interest has been renewed in utilizing natural gas as a transportation fuel to reduce both the use of oil and greenhouse gas emissions, driving the light duty (LD) natural gas vehicle (NGV) market. The momentum has been particularly strong in North America and Asia Pacific, according to Navigant Research who predicts that global annual LD NGV sales will grow from 2.3 million vehicles in 2014 to 3.8 million in 2023 thanks to key players like China, India, Thailand, and the United States. Demand for LD NGVs in European countries will remain relatively uneven from country to country, although

Navigant anticipates mature markets like Italy and Ukraine to see growth. In some countries, such as India, China, Thailand, and Brazil, a robust market for natural gas vehicles already exists. In others, such as the United States and Germany, NGVs are a relatively small niche, even though some major automakers have refocused their efforts in the NGV market.

[The Potential Downside of Natural Gas](#)

[New York Times, June 4] CONVENTIONAL wisdom, strongly promoted by the natural gas industry, is that natural gas drives down American emissions of carbon dioxide, by substituting for carbon-rich coal. The climate stabilization plan announced by the Obama administration on Monday relies on that. But in other ways, cheap natural gas drives emissions up. "It's a seesaw," said Michael W. Yackira, chairman of the [Edison Electric Institute](#), the trade association of the investor-owned electric companies. Some of the factors are hard to quantify, making it uncertain whether, in the long term, natural gas's net effect is positive for climate control. The reduction is simple. When burned in a power plant, natural gas has a smaller carbon footprint than coal, and when it displaces coal, emissions decline. That part is easy to quantify. Coal generation peaked in 2007 at a little over two billion megawatt hours while in 2013 it dropped to 1.58 billion, according to the [Energy Information Administration](#). (A megawatt-hour, or 1,000 kilowatt-hours, is the amount of electricity a typical suburban house uses in a month.) Over the same time, gas generation started at 857 million megawatt-hours and ended at 1.2 billion. If all the increase in gas-fired generation replaced coal, then the switch produced savings of 113.1 million tons of carbon a year. But natural gas is starting to replace nuclear power, which can be seen as wiping out about 10 percent of the savings, because a reactor has a carbon footprint of nearly zero. Last year the owners of five reactors announced they would retire them. Some had mechanical problems or political opposition; some did not. But all were challenged by the drop in prices on the wholesale market, driven down by natural gas. And several other reactors are losing money and could close this year. There are two other easy-to-see effects. The fracking for oil that has opened vast new supplies of gas is producing much of it in places where there is no pipeline. In those cases, the natural gas is burned off, or flared, because there is no way to ship it economically. According to the Energy Information Administration, last year the producers flared enough gas to have produced 27 million megawatt-hours. That pushed emissions up by 16.5 million tons, about 15 percent as much as the reduction in coal burning saved.

INDUSTRIES AND TECHNOLOGIES

[ANSYS Drives Electric Vehicle Innovation with GM, NREL and ESim](#)

Recent version of Fluent® simulation software includes models to accelerate designing and optimizing lithium-ion batteries

[PR Newswire, June 5] PITTSBURGH – The world is one step closer to more affordable and eco-friendly electric vehicles (EV) thanks to the efforts of ANSYS ([ANSS](#)), General Motors LLC, the Energy Department's (DOE) National Renewable Energy Laboratory (NREL) and ESim, which are working to design better, safer and longer-lasting lithium-ion EV batteries. The team's efforts have led to the standard inclusion of battery models in the latest release of ANSYS® Fluent® software, which is a significant milestone in advancing EV design efficiency. Over the last two and half years, the team worked on a DOE-funded project, Computer-Aided Engineering for Electric Drive Vehicle Batteries (CAEBAT), to combine new and existing battery models into engineering simulation software to shorten design cycles and optimize batteries for increased performance, safety and lifespan. The team is modeling thermal management, electrochemistry, ion transport and fluid flow. As a result of the work, a battery model is now standard in ANSYS Fluent, a leading computational fluid dynamics solution. This seamless Fluent capability helps battery developers break the time-consuming cycle of design-build-test-break for prototyping and manufacturing.

[A Battery Made of Iron Could Improve the Economics of Solar and Wind Power](#)

A new type of flow battery could allow renewable-energy developers to store power until it's most valuable.

[MIT Technology Review, May 29] At a small solar power plant near Modesto, in California's Central Valley, a startup called Enervault recently unveiled battery technology that could increase the amount of renewable energy utilities can use. The technology is based on inexpensive materials that researchers had largely given up on because batteries made from them didn't last long enough to be practical. But the company says it has figured out how to make the batteries last for decades. The technology is being demonstrated in a large battery that stores one megawatt-hour of electricity, enough to run 10,000 100-watt light bulbs for an hour. Enervault says its batteries could compete with the cheapest form of electricity storage available today—pumping water up a hill so that it can spin turbines as it flows back down, which is feasible only in certain locations. The company has been testing a similar, though much smaller, version of the

technology for about two years with good results. It has raised \$30 million in funding, including a \$5 million grant from the U.S. Department of Energy. The batteries are particularly well suited to storing large amounts of energy, such as hours of output from a wind farm or solar plant. They could thereby help solve a big problem with renewables: sometimes they generate electricity when not much is needed, such as in the early morning hours or on cool, sunny weekend days. The technology is a type of flow battery, so called because the energy storage materials are in liquid form. They are stored in big tanks until they're needed; then they're pumped through a relatively small device, called a stack, where they interact to generate electricity. Building bigger tanks is relatively cheap, so the more energy storage is needed, the better the economics become. That means the batteries are best suited for storing hours' or days' worth of electricity, not delivering quick bursts.

Educated and Equipped: Community Colleges Providing Technical Training for America's Future Scientists and Engineers

[Energy.gov, May 27] Looking for ways to advance your technical skills in the clean energy industry? The National Science Foundation (NSF) has been working for over 20 years to strengthen the nation's technical workforce through the [Advanced Technological Education \(ATE\) program](#). With its focus on two-year colleges, the ATE program awards grants to individual institutions and also funds ATE centers of excellence in science and engineering technician training. In 2012 alone, the ATE program educated more than 96,000 students in over 2,000 institutions across the country. As in our [previous blog post](#) on the [Department of Labor's TAACCCT program](#), a number of the ATE individual programs and centers focus on energy and advanced manufacturing topics. The funding supports several activities that help America's future scientist and engineers including: developing career pathways, professional development and teacher training, curriculum development and educational research, and promoting partnerships between employers and academic institutions...

Shot Awards \$10 Million for Chemical-Based Thermal Storage

[Solar Industry Magazine, May 30] The U.S. Department of Energy has [awarded](#) \$10 million through its SunShot Initiative to six research teams in order to develop a new generation of storage technologies that could be incorporated into concentrating solar power (CSP) stations. Unlike technologies currently employed involving heat-transfer fluids or molten salt, the award recipients are tasked with developing techniques for storing solar energy collected from CSP plants in the form of chemical bonds for weeks or even months. Existing forms of thermal storage involve either sensible or latent energy storage. Sensible energy storage requires large-volume, insulated tanks and is perhaps best exemplified by district heating systems, such as the solar thermal district heating system [Arcon](#) is building in Denmark. In a latent energy storage system, heat from the solar receiver is used to melt a material, such as the molten salt of the [Solana](#) CSP plant. A third way to store energy is in chemical bonds. In carrying out a chemical reaction using the sun's energy, energy is stored in the formation of the bonds. Energy stored in this way is also stable and even transportable, much like fossil fuels. When electricity is desired, the bonds are broken, releasing the energy as heat, which in turn boils water to drive the turbines in the power block

LEGISLATION AND REGULATION

EPA Wants 70 Percent Use of Combined-Cycle Natural Gas Plants

[Electric Light & Power, June 5] The U.S. Environmental Protection Agency (EPA) says in its new carbon dioxide rule that it wants modern natural gas combined cycle (NGCC) plants used much more than they are now. EPA Administrator Gina McCarthy announced the Obama administration's much-anticipated Clean Power Plan proposal June 2. The proposed rule seeks to cut carbon dioxide levels from the electric power sector 30 percent by 2030. It calls on states to devise their own plans to meet the goals. Several details about the EPA philosophy on carbon dioxide reduction are fleshed out in the first 150 pages of the 645-page proposal, according to GenerationHub. "As of 2012, there was approximately 245 GW of [natural gas combined cycle] NGCC capacity in the United States, 196 GW of which was placed in service between 2000 and 2012. In 2012, the average utilization rate of U.S. NGCC capacity was 46 percent, well below the utilization rates the units are capable of achieving," EPA said in the rule. EPA wants to see a use rate of between 65 percent and 75 percent for the combined-cycle units built in the past 15 years. It also wants all the nuclear units now under construction to get built. The agency also wants to stave off 6 percent of nuclear retirements that might otherwise occur. The EPA also wants a 6 percent heat rate improvement in coal-fired power units. EPA does not necessarily expect existing coal plants to retrofit with carbon capture and storage (CCS) technology, saying that economics or

space constraints might make that impractical. In the year 2025, the average age of the coal power unit is projected to be 49 years old, and 20 percent of units would be more than 60 years old, EPA notes.

[FERC Pay-to-Save Energy Plan Thrown Out by U.S. Court](#)

[Bloomberg, May 23] A federal regulator's plan to pay smart-grid companies including Converse Inc. and consumers such as Alcoa Inc. (AA) for using less electricity was struck down today by a U.S. appeals court, handing a victory to utilities that argued the system would discourage power-plant investment. The majority of a three-judge panel of the U.S. Court of Appeals in Washington agreed with the Electric Power Supply Association, whose members included PPL Corp. (PPL) and Exelon Corp. (EXC), that a federal rule encouraging electricity conservation "goes too far, encroaching on the states' exclusive jurisdiction to regulate the retail market." Under the rule, electricity users who cut consumption when prices and demand rise were paid the same amount as generators that produce electricity. The practice has been embraced because it can reduce the need to build additional expensive power plants and cut air pollution. The decision is "a victory for generators and a loss for demand response," said Paul Patterson, an analyst for Glenrock Associates LLC. Power producers view energy conservation as a "competitive threat" since it reduces demand and lowers revenue, Patterson said.

[Rice Produces Carbon-Capture Breakthrough](#)

Porous material polymerizes carbon dioxide at natural gas wellheads

[RICE.edu website, June 3] Rice University scientists have created an Earth-friendly way to separate carbon dioxide from natural gas at wellheads. A porous material invented by the Rice lab of chemist James Tour sequesters carbon dioxide, a greenhouse gas, at ambient temperature with pressure provided by the wellhead and lets it go once the pressure is released. The material shows promise to replace more costly and energy-intensive processes. Results from the research appear today in the journal [Nature Communications](#). Natural gas is the cleanest fossil fuel. Development of cost-effective means to separate carbon dioxide during the production process will improve this advantage over other fossil fuels and enable the economic production of gas resources with higher carbon dioxide content that would be too costly to recover using current carbon capture technologies, Tour said. Traditionally, carbon dioxide has been removed from natural gas to meet pipelines' specifications.

[U.S. Unveils Sweeping Plan to Slash Power Plant Pollution](#)

[Reuters, June 2] The U.S. power sector must cut carbon dioxide emissions 30 percent by 2030 from 2005 levels under federal regulations unveiled on Monday that form the centerpiece of the Obama administration's climate change strategy. The Environmental Protection Agency's proposal is one of the most significant environmental rules proposed by the United States, and could transform the power sector, which relies on coal for nearly 38 percent of electricity. It also set off a political backlash likely to run well into next year.

[Will EPA Limits on Power Plant Emissions Kill Jobs, Or Is That A Big Lie?](#)

[Phoenix Business Journal, May 28] The EPA is expected to announce rules limiting carbon dioxide emissions from existing power plants on Monday. The [Environmental Protection Agency's](#) regulations to reduce carbon dioxide emissions from power plants will cost the U.S. 224,000 jobs a year through 2030, according to a [new study](#) by the [U.S. Chamber of Commerce](#). The chamber's study, which was conducted by IHS, looked at the impact of EPA's regulations on both new and existing power plants. The EPA hasn't yet issued its new regulation for existing power plants — that rule is expected to be announced Monday — but IHS based its analysis on a proposal by the [Natural Resources Defense Council](#). The chamber says EPA's rule is likely to be similar to NRDC's policy framework. The chamber's study contends the EPA power plant regulations will reduce gross domestic product by \$51 billion a year on average through 2030, and force consumers to pay \$289 billion more for electricity during that time frame. Plus, the regulations will result in only a slight reduction in global carbon emissions, the chamber contends, since the EPA regulations won't apply to the rest of the world.

WESTERN POWER

[CA ISO Clarifying Renewable Generation Interconnection Process](#)

[Fierce Energy, June 2] The California Independent System Operator Corporation (ISO) has approved generation interconnection enhancements to further the development of renewables and make interconnection easier by improving the fast track study process. The work continues interconnection reforms that began in 2008 with a goal of establishing study processes that more effectively manage the large influx of renewable resources and provide developers clearer

procedures and expectations. The fast track process allows for a project of 5 MW or less to seek to interconnect as "energy only" status by passing a set of screening criteria developed by the Federal Energy Regulatory Commission (FERC) as part of its pro forma interconnection procedures.

[First Wind Finalizes Solar PV PPA for Seven Projects in Utah](#)

[Power Engineering, June 5] First Wind said it finalized seven 20-year power purchase agreements with Rocky Mountain Power to sell the output from a group of solar energy projects in Utah. RMP will buy the output of the planned 20-MW Seven Sisters projects under its obligation from the federal Public Utility Regulatory Policies Act. Seven Sisters includes seven separate solar photovoltaic (PV) projects sited in two counties in Utah. Major construction is scheduled to begin in late 2014 with a target completion date of July 2015. Six of the projects will be 3-MW (AC) and the seventh will be 2-MW (AC). The projects are the first in Utah to be developed by First Wind's new solar division, First Wind Solar Group, which was established to explore solar opportunities near the company's wind projects in the West, Hawaii and the Northeast.

[PNM Proposes Plan to Cut Water Use and Power Plant Emissions](#)

[Fierce Energy, June 4] If its 2015 renewable energy plan just filed with the New Mexico Public Regulation Commission is approved, PNM (PNM Resources' New Mexico utility) will build four more solar energy centers in 2015, increasing its solar capacity to 107 MW. "We believe our proposal will help us provide dependable power cost-effectively, while reducing water use and carbon emissions at power plants," said PNM Planning and Resource Director Pat O'Connell. If approved, PNM will commence building four 10 MW solar centers at a total cost of \$79 million to meet the renewable energy requirement in 2016 and replace some energy currently generated by coal. PNM's wind, solar and geothermal resources will generate the power, saving approximately 382 million gallons of fresh water at power plants and reducing carbon emissions by the equivalent of taking 201,000 cars off the road.

[Pistachio Farm Saves \\$100,000 on Electric Bill in First Year](#)

[Energy Manager Today, May 28] CalCom Solar began installation of a 570 kW solar system to power a 300 HP irrigation pump for Pleasant Valley Pistachios farm in central California. [CalCom Solar's](#) proprietary Solar AG Energy software was able to precisely analyze how solar would impact Pleasant Valley's participation in energy mitigation programs and determined that in the first year alone, the farm will save more than \$100,000 on electric utility expenses.

ARIZONA STATE INCENTIVES/POLICIES

ARIZONA COMMERCE AUTHORITY (ACA)

INCENTIVES

Arizona has lowered taxes, streamlined regulations, and established a suite of incentives to support corporate growth and expansion. The Arizona Competitiveness Package, groundbreaking legislation adopted in 2011, makes it easier for existing Arizona companies to prosper and establishes Arizona as one of the most desirable places for expanding companies to do business. Give your company a competitive edge by utilizing Arizona's incentives.

- [Job Training](#)
- [Quality Jobs](#)
- [Qualified Facility](#)
- [Computer Data Center Program](#)
- [Research & Development](#)
- [Foreign Trade Zone](#)
- [Military Reuse Zone](#)
- [Angel Investment](#)
- [Renewable Energy Tax Incentive](#)
- [Healthy Forest](#)
- [Sales Tax Exemption for Machinery and Equipment](#)
- [Lease Excise](#)

- [Additional Depreciation](#)
- [Work Opportunity](#)
- [Commercial/Industrial Solar](#)
- [SBIR/STTR](#)
- [Private Activity Bonds](#)
- [QECB's](#)

(ACA) PROGRAMS

DATABASE OF STATE INCENTIVES FOR RENEWABLES & EFFICIENCY (DSIRE)

- [Arizona Incentives/Policies](#)
- [Federal Incentives/Policies](#)
- [Solar Policy News](#) - DSIRE provides summaries of current solar policy developments and an archive of past solar policy developments. Current solar news appears below the news archive, which is searchable by several criteria.

GRANTS

The following solicitations are now available:
(Click on title to view solicitation)

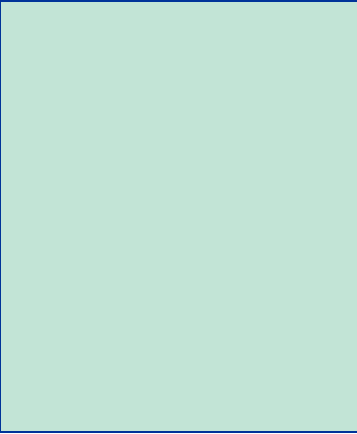





- [Clean Energy Manufacturing Innovation Institute for Composite Materials & Structures](#)
Close Date: June 19, 2014
- [NEW! State Energy Program Planning 2014 Competitive Awards](#) - Response due June 30, 2014
- [Solar Market Pathways](#) Concept Paper Submission Deadline: May 28, 2014 5:00 PM ET. Full Application Submission Deadline: July 3, 2014 5:00 PM ET.
- [Renewable Energy for America](#) Close Date: July 7, 2014
- [NEW! Secure and Trustworthy Cyberspace](#) - Response due September 19, 2014
- [NEW! Civil Infrastructure Systems](#) - Response due October 1, 2014
- [Sunshot "Race to the Roof" Initiative](#) Registration Due: October 31, 2014
- [Energy, Power, and Adaptive Systems](#) Close Date: November 3, 2014
- [NSF/DOE Partnership on Advanced Frontiers in Renewable Hydrogen Fuel Production Via Solar Water Splitting Technologies 2014-2016](#) Close Date: Dec. 11, 2014
- [Energy for Sustainability](#) Response Due: February 19, 2015
- [Solar Market Pathways](#) Response due July 3, 2015
- [Advanced Fossil Energy Projects](#) - Solicitation Number: DE-SOL-0006303 Expiration Date: November 30, 2016
- [Energy Department Announces Next Phase of L Prize Competition to Create Innovative Energy-Saving Lighting Products](#) – Notification of Intent to Submit Product minimum of 30 days, but no more than 45 days prior to product submission. Monetary prize goes to the first successful entrant with the earliest timestamp.
- [Repowering Assistance Program](#) – Ongoing
- [Rural Business Enterprise Grants](#) – Ongoing

- [Rural Business Opportunity Grants](#) – Ongoing
- [Sustainable Agriculture Research and Education Grants](#) – Ongoing
- [Renewable Energy RFP's - Solicitations for Renewable Energy Generation, Renewable Energy Certificates, and Green Power](#) – Various Deadlines
- [U.S. Dept. of Agriculture - Rural Development Grant Assistance](#)
- [Green Refinance Plus](#) - Ongoing

ENERGY-RELATED EVENTS

2014

- ✚ [Dept. of Energy's 13th Annual Small Business Forum & Expo](#)
June 10-12, 2014 Tampa, FL
- ✚ [Native American Economic Development & Energy Projects Conference](#)
June 16-17, 2014 Anaheim, CA
- ✚ [AZBio Expo 2014](#)
June 19, 2014 Scottsdale, AZ
- ✚ [32nd Annual West Coast Energy Management Congress](#)
June 25-26, 2014 Seattle, WA
- ✚ [Solar 2014: 43rd Annual Conference](#)
July 6-10, 2014 San Francisco, CA
- ✚ [Renewable Energy Development on Federal Lands 2014](#)
July 16-17, 2014 Denver, CO
- ✚ [HydroVision International](#)
July 22-25, 2014 Nashville, TN
- ✚ [Biomass 2014: Growing The Future Bioeconomy](#)
July 29-30, 2014 Washington, DC
- ✚ [National Geothermal Summit](#)
August 5-6, 2014 Reno, NV
- ✚ [Microgrid Development for Public & Private Sectors](#)
August 12-14, 2014 San Diego, CA
- ✚ [2014 ACEEE Summer Study on Energy Efficiency in Buildings](#)
August 17-22, 2014 Pacific Grove, CA
- ✚ [EPI's 4th Annual Energy Policy Research Conference](#)
September 4-5, 2014 San Francisco, CA
- ✚ [HTUF 2014 National Meeting - The Forum for Action in High-Efficiency Commercial Vehicles](#)
September 22-24, 2014 Argonne, National Lab Argonne, IL
- ✚ [Geothermal Energy Expo](#)
September 28-October 1, 2014 Portland, OR
- ✚ [Solar Power International](#)
Oct. 20-23, 2014 Las Vegas, NV
- ✚ [GreenBuild International Conference & Expo](#)
October 22-24, 2014 New Orleans, LA

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-  [World Bio Markets USA](#)
October 27-29, 2014 San Diego, CA
 -  [Governor's Celebration of Innovation](#)
November 13, 2014
 -  [Solar Power Generation USA 2015](#)
February 4-5, 2015 San Diego, CA
 -  [ASU Sustainability Series Events](#)
 -  [Green Building Lecture Series](#)
Granite Reef Senior Center Scottsdale, AZ